WHAT IS CLAIMED IS:

1. An optical switching apparatus having plural input ports and plural output ports and a first optical switch and a second optical switch for carrying out route setting between said input ports and said output ports, said optical switching apparatus comprising:

plural branching portions which are provided with said plural input ports respectively, receive input signals and output the input signals to said first and second optical switches;

said first and second optical switches for carrying out the route setting of the input signals from said branching portions;

plural selecting portions which are provided with said plural output ports respectively, selects one of the input signals set a route by said first and second optical switches and outputs;

plural optical performance monitoring portions which are provided in front and rear of said first and second optical switches, monitor optical signals; and

a controller for concealing a alarm detected by any one of said optical performance monitoring portions when at least one of (1) change of a set route by at least one of said first and second optical switches and (2) a system switch operation of switching a redundant system comprising said first and second optical switches by switching of said branching portions and said selecting portions is carried out.

2. The optical switching apparatus as claimed in claim 1, wherein said

controller comprises:

a alarm register for temporarily storing alarms detected by said performance monitoring portions;

a mask register for temporarily storing alarms on which the concealing process should be carried out; and

a mask management memory for storing a combination of alarms to be concealed for every change type of a communication route in said optical switching apparatus, wherein when the communication route is changed, the optimum combination to be concealed is selected from said mask management memory on the basis of the change type thereof and set into said mask register, and the presence or absence of abnormality is judged by using the content of said mask register and the content of said alarm register renewed after the change process of the communication route.

3. The optical switching apparatus as claimed in claim 2, wherein said change type of the communication route contains a route switching for switching a route set by said first and second optical switches and a redundant switching for switching a redundant system comprising said first and second optical switches, and said controller discriminates an operation state so that the route switching and the redundant switching are not carried out with being overlapped with each other.

4. The optical switching apparatus as claimed in claim 3, wherein the redundant switching contains an autonomic redundant switching in which the switching operation is autonomically carried out by said optical switching

apparatus itself on the basis of the presence or absence of a alarm detected by any one of said performance monitoring portions, and a compulsory redundant switching in which the switching operation is compulsorily carried out irrespective of the presence or absence of the alarm.

5. A mask management memory for storing information on alarms to be masked, out of alarms detected by performance monitoring portions of an optical switch, in accordance with a changing method of a set route in said optical switch.

6. An optical switching apparatus having plural input ports and plural output ports and a first optical switch and a second optical switch for carrying out route setting between said input ports and said output ports, said optical switching apparatus comprising:

plural branching portions which are provided with said plural input ports respectively, receive input signals and output to said first and second optical switches;

said first and second optical switches for carrying out the route setting of the input signals from said branching portions;

plural selecting portions which are provided with said plural output ports respectively, selects one of the input signals set a route by said first and second optical switches and outputs;

plural optical performance monitoring portions which are provided in front and rear of said first and second optical switches, monitor optical signals; and a controller for emitting a alarm detected by any one of said optical performance monitoring portion when neither (1) change of a set route by at least one of said first and second optical switches nor (2) a system switch operation of switching a redundant system comprising said first and second optical switches by switching of said branching portions and said selecting portions is carried out.

7. The optical switching apparatus as claimed in claim 1, wherein a monitoring item of any one of said performance monitoring portions contains the intensity of an optical signal.

8. The optical switching apparatus as claimed in claim 1, wherein a monitoring item of any one of said performance monitoring portions contains a bit error rate.

9. The optical switching apparatus as claimed in claim 1, wherein a monitoring item of any one of said performance monitoring portions contains a ratio of optical-signal and noise.

10. The optical switching apparatus as claimed in claim 1, wherein a monitoring item of any one of said performance monitoring portions contains Q-value.

11. An optical transmission system comprising:

an optical transmission apparatus having first and second optical switches;

an optical receiving apparatus having third and fourth optical switches; and

first and second transmission routes through which said first and second optical switches provided to said optical transmission apparatus are respectively connected to said third and fourth optical switches provided to said optical receiving apparatus, wherein

said optical transmission apparatus has a branching portion for branching an input signal and outputting to any one of said first and second optical switches, and plural optical performance monitoring portions disposed of front and rear of said first and second optical switches to monitor optical signals,

said optical receiving apparatus has a selecting portion for selecting and outputting any one of signals output from said third and fourth optical switches, and plural optical performance monitoring portions disposed of front and rear of said third and fourth optical switches to monitor optical signals,

the switching of said branching portion and said selecting portion is carried out on the basis of monitoring results of said performance monitoring portions provided to said optical transmission apparatus or said optical receiving apparatus, thereby performing a switching operation of a redundant system of said optical transmission system,

said optical transmission apparatus and said optical receiving apparatus transmits/receives control information so that alarms detected due to the route switching operation of an optical switch provided to each of said transmission apparatus and said receiving apparatus and the redundant system .switching operation of said optical transmission system are at least concealed in both of said transmission apparatus and said receiving apparatus.

12. A method of setting up an optical signal route receives input signals each of plural input ports and transmitting to a first optical switch and a second optical switch, sets up route between said input ports and plural output ports by said first and second optical switches, and selects one of input signals for which the route setting and then output to any one of said plural output ports, wherein

that performance of optical signals is monitored in front and rear of said first and second optical switches,

and concealing process is carried out previously so that a pseudo-alarm which occurs due to change of a setup route in said first and second switches or change of selection of the input signal for which the route is set up in said first and second optical switches is not detected when the performance monitoring is carried out.

13. The method of setting up an optical signal route setup as claimed in claim 12, wherein the concealing processing comprises:

a step of storing a combination of alarms to be subjected to concealing process for each change type of a communication route in said optical switching apparatus previously;

a step of selecting proper alarms from the combination of the alarms which are stored as alarms to be concealed on the basis of the change type previously, and temporarily storing the proper alarms when the communication route is changed; and

a step of judging the presence or absence of abnormality by comparing a alarm detected when the communication route is changed with the temporarily-stored alarms to be concealed to.

14. The method of setting up an optical signal route setup as claimed in claim 13, wherein the change type of the communication route contains a route switching for switching a route set by said first and second optical switches and a redundant switching for switching a redundant system comprising said first and second optical switches, and an operation state is discriminated so that the route switching and the redundant switching mode are not carried out with duplication with each other.

15. The method of setting up an optical signal route setup as claimed in claim 14, wherein the redundant switching contains an autonomic redundant switching in which the switching operation is autonomically carried out by said optical switching apparatus itself on the basis of the presence or absence of a alarm detected by each of said performance monitoring portions, and a compulsory redundant switching in which the switching operation is compulsorily carried out irrespective of the presence or absence of the alarm.

16. The method of a optical signal route setup in an optical transmission system having a redundant system which includes an optical

transmission apparatus having first and second optical switches, an optical receiving apparatus having third and fourth optical switches, and first and second transmission routes through which said first and second optical switches provided to said optical transmission apparatus are respectively connected to said third and fourth optical switches provided to said optical receiving apparatus, wherein

said optical transmission apparatus branches an input signal, carries out route setup in said first and second optical switches, outputs the input signal to said first and second transmission routes, and monitors the performance of the optical signal in front and rear of said first and second optical switches, and

said optical receiving apparatus receives the input signal from said first and second optical transmission routes, carries out route setup in said third and fourth optical switches, any one of the input signals from said third and fourth optical switches selects and outputs as an output signal, and monitors the performance of the optical signal in front and rear of said third and fourth optical switches, and

wherein a redundant system switching operation of said optical transmission system is performed by switching a route containing said first optical switch, said first transmission route and said third optical switch and a route containing said second optical switch, said second transmission route and said fourth optical switch to each other on the basis of the monitoring result of at least one performance monitoring portion provided to each of said optical transmission apparatus and said optical receiving apparatus, and

said optical transmission apparatus and said optical receiving apparatus transmits/receives control information so that alarms caused by at least one of the route switching operation of an optical switch provided to each of said transmission apparatus and said receiver and the redundant system switching operation of said optical transmission system are concealed in both of said transmission apparatus and said receiving apparatus.